



# Model **33ATD**

## COMBINATION AIR AND VACUUM VALVE WITH THROTTLING DEVICE



- Large Orifice for Start Up Air Exhaust
- Small Orifice for Air Exhaust during Operation
- Large Orifice for Vacuum Break
- Easily Serviced without removal from Pipeline
- Simple and Effective Patented Design
- Corrosion Resistant Internal Parts

The Cla-Val Model 33ATD is designed to protect fire systems from air entrapment and vacuum collapse.

The 33ATD Combination Air Release and Vacuum Breaker Valve has a large orifice and smaller orifice that work together to relieve air accumulation during operation.

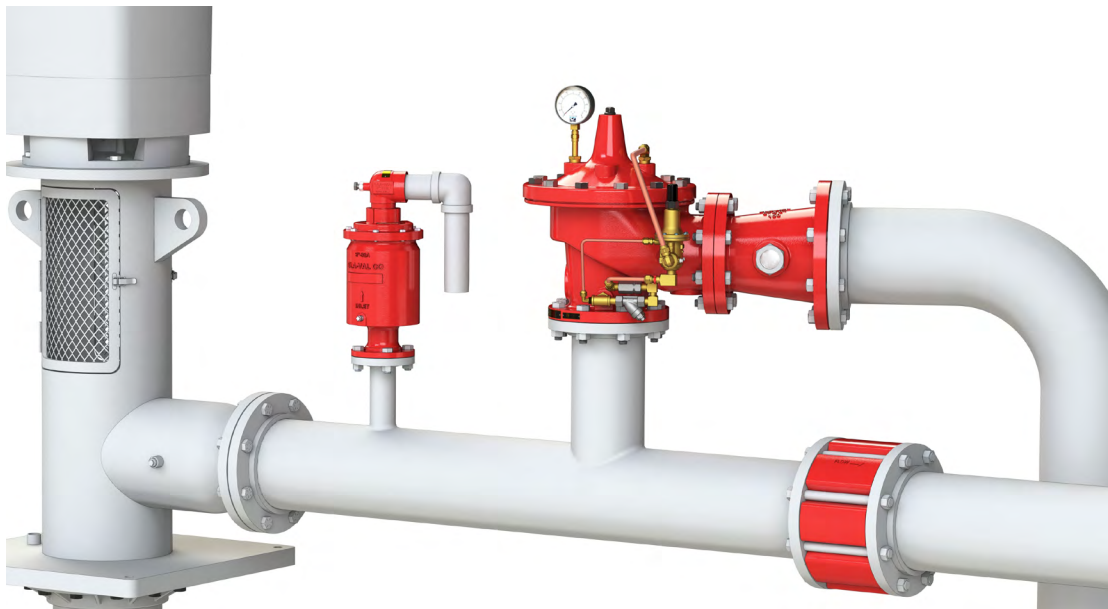
The large orifice eliminates air during start up and allows full vacuum break during shut down.

The smaller orifice eliminates air as it accumulates during operation. Once air is released, the patented float poppet system closes drip tight.

Valve servicing is simple because the entire float poppet system can be replaced without removal of the valve body from the pipeline.

### Typical Applications

- Vertical Turbine Pumps
- Split Case Pumps
- High Points of Piping Design

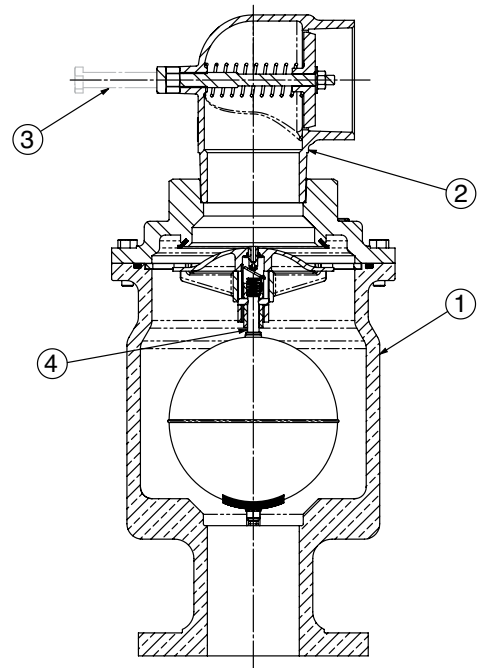


## Operation

**Air Release:** When line is filled or pump started, air is throttled through the throttling device (Item 2). The float assembly (Item 4) rises as liquid fills the valve (Item 1) and forms a drip-tight closure with the large orifice. During operation, additional air is exhausted through the small orifice contained within the float assembly (Item 4).

**Vacuum Break:** When line pressure drops below positive pressure and the liquid level lowers, the float assembly (Item 4) is separated from the large orifice, allowing air into the line, thus preventing a vacuum. The TD throttling device (Item 2) is spring loaded to allow air intake and shifts to allow full vacuum intake during shut down.

**Throttling Device:** The TD (Item 2) contains a spring loaded adjustment screw (Item 3) that allows users to throttle air exhaust and get full vacuum break prevention.



| Item No. | Description          |
|----------|----------------------|
| 1        | 33A Body             |
| 2        | TD Throttling Device |
| 3        | TD Adjustment Screw  |
| 4        | Float Assembly       |

## Specifications

### UL Approved Sizes

1", 2", 3", 4", 6"

**Inlet:** NPT or Flanged

**Outlet:** NPT

### Pressure Ratings

150 class, 250 psi maximum (Ductile Iron)

150 class, 285 psi maximum (All other materials)

300 class, 300 psi maximum (All materials)

### Temperature Range

Water: to 180° F. Max

### Fluids

Water

### Materials

**Body & Cover:** Standard Epoxy Coated Ductile Iron ASTM A-536

**Float:** Standard 316 Stainless Steel Monel Super Duplex

**Rubber Parts:** Buna-N® Synthetic Rubber

### Optional Listed Materials for Seawater and Severe Service Applications:

- **Nickel Aluminum Bronze (NAB)** ASTM B148 Alloy C95800
- **Monel - QQ-N-288 Comp B** ASTM A494 Grade M30H
- **Cast Steel** ASTM A216 Grade WCB
- **316 Stainless Steel** ASTM A743 Grades CF3M and CF8M
- **Super Austenitic Stainless Steel** ASTM A351 Grade CK3MCuN (SMO 254)
- **Super Duplex Stainless Steel** ASTM A890 Grade 5A (CE3MN)

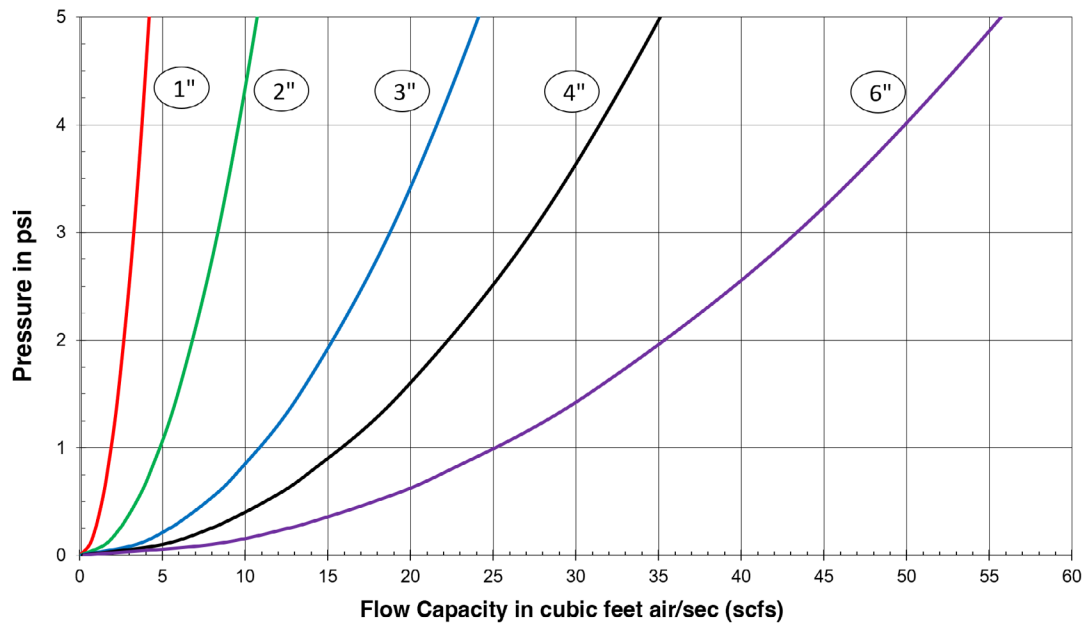
### Pressure Ratings

| Valve Size | Orifice Diameter             | Standard Maximum Pressure |
|------------|------------------------------|---------------------------|
| 1"         | 0.076"                       | 300 psi                   |
| 2"         | 0.076"                       | 300 psi                   |
| 3" - 4"    | 0.076"                       | 300 psi                   |
| 6"         | 0.076"                       | 300 psi                   |
| 3" - 4"    | Optional upon request 0.125" | 300 psi                   |

## Valve Sizing Selection

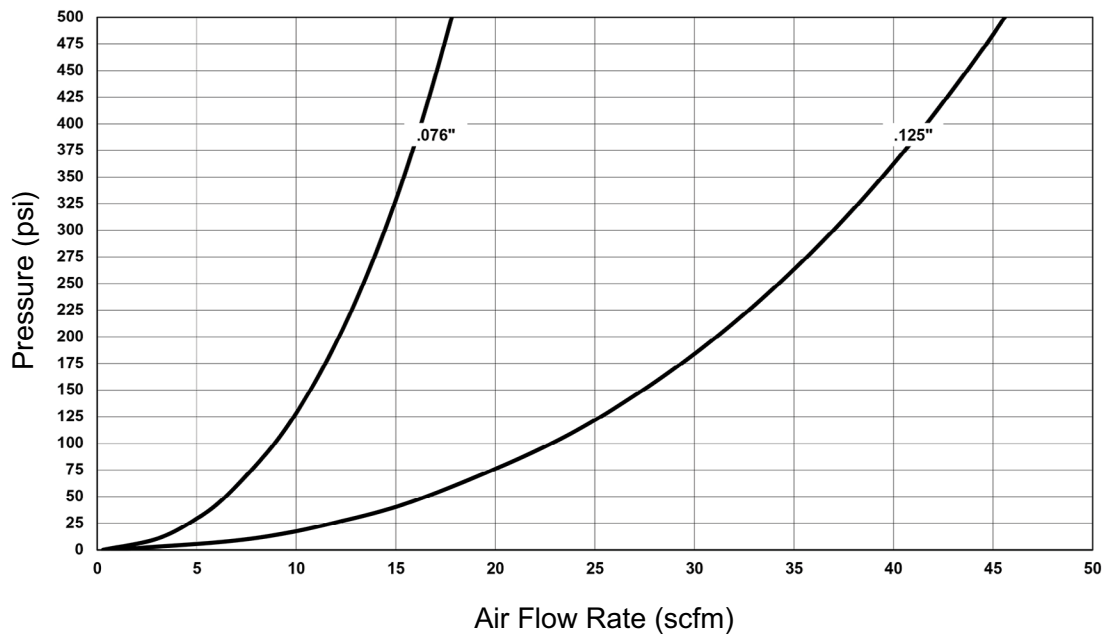
### Air-Vacuum Flow Capacity

Determine anticipated water flow and allowable pressure differential for the pipeline application. Select valve from chart to exhaust or admit air at the same rate as water filling or draining (in CFS). For larger flows, two or more Model 33ATD's may be installed in parallel.



### Air Release Capacity

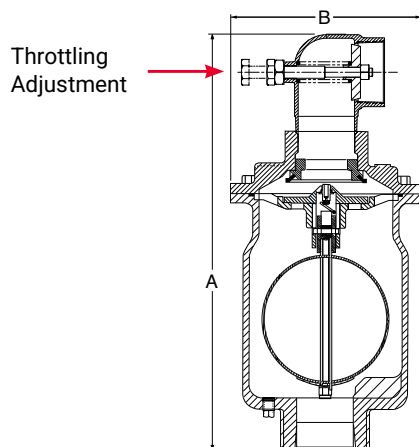
During pressurized pipeline operation, small pockets of entrapped air will be released through the float actuated 0.076 or 0.125 inch orifice. Use chart to determine discharge capacity.



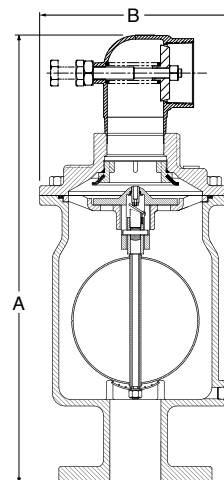
## Dimensions (In Inches)

### Model 33ATD - 1", 2", 3", 4" and 6" Sizes

| Valve Size                                   | 33A Pressure Class 300 Lb Threaded |        |        |        | 33A Pressure Class 150 LB Flanged (INLET) |        |        |        |        | 33A Pressure Class 300 LB Flanged (INLET) |        |        |        |        |
|----------------------------------------------|------------------------------------|--------|--------|--------|-------------------------------------------|--------|--------|--------|--------|-------------------------------------------|--------|--------|--------|--------|
|                                              | 1"                                 | 2"     | 3"     | 4"     | 1"                                        | 2"     | 3"     | 4"     | 6"     | 1"                                        | 2"     | 3"     | 4"     | 6"     |
| <b>A</b>                                     | 12.50                              | 16.50  | 18.50  | 20.00  | 13.00                                     | 17.75  | 21.75  | 23.50  | 26.75  | 15.00                                     | 18.00  | 22.00  | 23.75  | 27.25  |
| <b>B</b>                                     | 6.25                               | 7.50   | 9.25   | 9.25   | 6.25                                      | 7.50   | 9.25   | 9.25   | 11.50  | 6.25                                      | 7.50   | 9.25   | 9.25   | 11.50  |
| <b>Inlet (ANSI)</b>                          | 1" NPT                             | 2" NPT | 3" NPT | 4" NPT | 1"                                        | 2"     | 3"     | 4"     | 6"     | 1"                                        | 2"     | 3"     | 4"     | 6"     |
| <b>Outlet (NPT)</b>                          | 1" NPT                             | 2" NPT | 3" NPT | 4" NPT | 1" NPT                                    | 2" NPT | 3" NPT | 4" NPT | 6" NPT | 1" NPT                                    | 2" NPT | 3" NPT | 4" NPT | 6" NPT |
| <b>Number of Holes</b>                       | -                                  | -      | -      | -      | 4                                         | 4      | 4      | 8      | 8      | 4                                         | 4      | 4      | 8      | 12     |
| <b>Diameter of Bolts</b>                     | -                                  | -      | -      | -      | 0.50                                      | 0.63   | 0.63   | 0.63   | 0.75   | 0.50                                      | 0.63   | 0.63   | 0.63   | 0.75   |
| Approximate calculated shipping weight (lb.) | 25                                 | 29     | 38     | 40     | 30                                        | 39     | 48     | 50     | 126    | 34                                        | 41     | 55     | 58     | 140    |

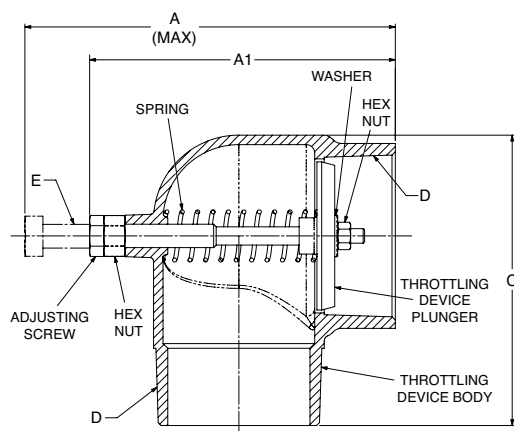


Threaded



Flanged

## Throttling Device Dimensions (In Inches)



| TD Assembly Size | A (MAX) | A1   | ØB   | C     | D (NPT)     | E          |
|------------------|---------|------|------|-------|-------------|------------|
| 1"               | 4.25    | 3.00 | 1.61 | 3.00  | 1" - 11-1/2 | M10x1.00   |
| 2"               | 5.50    | 4.81 | 2.67 | 3.82  | 2" - 11-1/2 | M12x1.75   |
| 3"               | 9.00    | 6.45 | 4.06 | 6.20  | 3" - 8      | 1/2-13 UNC |
| 4"               | 9.05    | 7.33 | 5.20 | 7.72  | 4" - 8      | M12x1.75   |
| 6"               | 12.75   | 9.75 | 7.63 | 11.38 | 6" - 8      | 5/8-11 UNC |

## Model Number Codes

| Size |
|------|
| 1"   |
| 2"   |
| 3"   |
| 4"   |
| 6"   |

| Main Valve |
|------------|
| 33ATD      |

| Body           |
|----------------|
| D Ductile Iron |
| C Cast Steel   |
| T 316 SS       |
| N N.A.B.       |
| U Super Duplex |
| X Other        |

| Float          |
|----------------|
| T 316 SS (F)   |
| M Monel        |
| U Super Duplex |
| X Other        |

| Elastomer |
|-----------|
| B Buna    |

| Inlet     |
|-----------|
| NPT       |
| ANSI 150# |
| ANSI 300# |

| Face    |
|---------|
| RF      |
| FF      |
| X Other |